



**UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO. 0879357336	FILING DATE 07/22/97	FIRST NAMED INVENTOR SCHOFIELD	ATTORNEY DOCKET NO. DMMOT-P-030
-------------------------------	-------------------------	-----------------------------------	------------------------------------

LM32/0708

FREDERICK S BURKHART  
VAN DYKE GARDNER LINN & BURKHART  
POST OFFICE BOX 888695  
GRAND RAPIDS MI 49588-8695

EXAMINER MANHAVA, A
------------------------

ART. UNIT 2736	PAPER NUMBER
-------------------	--------------

DATE MAILED:

07/08/98

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

*See Attached*

# Office Action Summary

Application No.  
**08/935,336**

Applicant(s)  
**Schofield et al.**

Examiner  
**Ashok Mannava**

Group Art Unit  
**2736**



☒ Responsive to communication(s) filed on Sep 22, 1997

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 50-114 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 50-114 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 2736

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

2. Claims 50, 51, 69, 71, 73, 85, 102, 103 are rejected under 35 U.S.C. 102(e) as being anticipated by Secor (5,289,321).

Regarding claim 50, Secor discloses 3 cameras and a display (36). Secor discloses enhancing the display with a marker frame (58) to help the driver determine the distance between vehicles. (see column 4, lines 57-68).

Regarding claim 51, the marker frame is the graphic overlay.

Regarding claims 69, 85, 102 and 103 Secor discloses 3 cameras and a display (36). Secor discloses enhancing the display with a marker frame (58) to help the driver determine the distance between vehicles. (see column 4, lines 57-68). Secor discloses highlighting of images of objects too close to the vehicle met by displaying the object too close in the frame when the object is overtaking the vehicle.

Art Unit: 2736

Regarding claim 71, Secor discloses objects in the marker frame can be too close for a safe lane change.

Regarding claim 73, Secor discloses the frame marker helps to approximate distance and distance is a function of the vehicle speed.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 52-59, 87-90 and 104-110 are rejected under 35 U.S.C. 103(a) as being unpatentable over Secor as applied to claims 50, 85, 102 further in view of Saneyoshi et al. (5,410,346).

Regarding claims 52, 87, 104, Secor does not disclose a horizontal mark. However, Saneyoshi et al. discloses horizontal marks in figure (18) at regular intervals which help define the curvature of the road. Furthermore, it would have been obvious to one of ordinary skill in the art to use horizontal marks in Secor so the driver can determine if a vehicle in the surrounding area is staying within the lanes on a curved road.

Art Unit: 2736

Regarding claims 53 and 105, Saneyoshi et al. discloses the marks are adjusted in response to vehicle speed. (see column 16, line 7).

Regarding claim 54, Saneyoshi et al. discloses marks placed at regular intervals. Saneyoshi et al. does not disclose the intervals are rearward. However, it is highly conventional to detect and display objects rear of the vehicle as disclosed by Secor. Furthermore, it would have been obvious to one of ordinary skill in the art to adapt the device of Saneyoshi et al. to display objects to the rear of the vehicle since rear-end collisions are a common hazard.

Regarding claim 55, Saneyoshi et al. discloses lines which are lane boundaries.

Regarding claim 56, Saneyoshi et al. discloses in figure 18 that the horizontal lines move with the curvature of the road.

Regarding claims 57 and 58, Saneyoshi et al. discloses a steering angle sensor (4). (see column 16, line 8).

Regarding claim 59, Saneyoshi et al. discloses including the lane boundaries based on the anticipated travel determined from the steering angle and the vehicle speed.

Regarding claims 88 and 89, Secor does not disclose monitoring movement of a steering system or speed of the vehicle. However, Saneyoshi et al. discloses monitoring steering angle sensor (4) and speed of the vehicle for accurately displaying the anticipated travel of the vehicle. Thus, it would have been obvious to one of ordinary skill in the art to monitor the steering system and speed of a vehicle as disclosed by Saneyoshi et al. in order to produce an accurate display.

Art Unit: 2736

The rejection of claim 90 is recited in the rejection of claims 88 and 89 except for highlighting objects too close is a function of speed. Secor discloses highlighting objects to close using the marker frame. The distance between a vehicle and an object is a function of the vehicle and objects speed.

Regarding claim 106, Saneyoshi et al. discloses marks placed at regular intervals.

The rejections of claims 107-110 are recited in the rejections of claims 55-58.

5. Claim 60 is rejected under 35 U.S.C. 103(a) as being unpatentable over Secor in view of Saneyoshi et al. as applied to claim 59 above, and further in view of Hseih (5,574,443).

Regarding claim 60, Saneyoshi et al. does not disclose disabling the graphic overlay when not in reverse gear. However, Secor in view of Saneyoshi et al. discloses an improved object detection system and display, and Secor discloses displaying objects detected from the rear. Thus, it would have been obvious to one of ordinary skill in the art to use the improved system for travel in any direction, including reverse, to prevent collisions. Hseih discloses activating the apparatus when the vehicle is backing up. (see abstract). Hseih does not specifically disclose determining that the vehicle is in reverse by the reverse gear. However, it would have been obvious to one of ordinary skill in the art to detect the gear position, because it is simple and quick. Furthermore, it would have been obvious to one of ordinary skill in the art to disable the system, when the vehicle is not in reverse so as not to distract the driver when driving forward.

Art Unit: 2736

6. Claims 61, 62, 64, 66, 77, 79, 81, 83, 92, 93, 96, 98, 111, 112 are rejected under 35 U.S.C. 103(a) as being unpatentable over Secor as applied to claim 50, 69, 85 and 102 above, and further in view of Nishimura et al. (4,713,685).

Regarding claims 61, 77, 92 and 111, Secor discloses 3 cameras. Secor does not disclose a substantially seamless panoramic display. Nishimura et al. discloses a substantially seamless display in figure 3(c) on one CRT. Furthermore, it would have been obvious to one of ordinary skill in the art to use the side by side display of Nishimura et al. in Secor, so a display from two or more cameras can be done on a single CRT.

Regarding claims 62, 79, 93 and 112, Nishimura et al. discloses displaying images on a CRT display surface.

Regarding claims 64, 81 and 96, Secor discloses 3 cameras. Nishimura et al. discloses a substantially seamless display. Nishimura et al. does not disclose a display for three cameras. However, one of ordinary skill in the art would have readily recognized that the display of Nishimura et al. could easily have been modified for three cameras. Furthermore, it would have been obvious to one of ordinary skill in the art to use one display for three cameras in order to conserve space and costs.

Regarding claims 66, 83 and 98, Nishimura et al. discloses a display for displaying both images.

Art Unit: 2736

7. Claims 63, 67, 80, 84, 94, 99, 113 are rejected under 35 U.S.C. 103(a) as being unpatentable over Secor in view of Nishimura et al. as applied to claims 62, 64, 77, 81, 92, 96 and 111 above, and further in view of Jewell et al. (5,325,386).

Regarding claims 63, 67, 80, 84, 94, 99 and 113, Secor in view of Nishimura et al. does not disclose a CMOS imaging array. However, in column 4, lines 39-46, Jewell et al. teaches the use of a CMOS imaging device. Furthermore, it would have been obvious to one of ordinary skill in the art to use the CMOS device of Jewell et al. in Secor, because it has low power consumption.

8. Claims 68 and 114 are rejected under 35 U.S.C. 103(a) as being unpatentable over Secor as applied to claims 50 and 102 above, and further in view of Jewell et al.

Regarding claims 68 and 114, Secor does not disclose a CMOS imaging array. However, in column 4, lines 39-46, Jewell et al. teaches the use of a CMOS imaging device. Furthermore, it would have been obvious to one of ordinary skill in the art to use the CMOS device of Jewell et al. in Secor, because it has low power consumption.

9. Claims 65, 82 and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Secor in view of Nishimura et al. as applied to claims 64, 81 and 96 above, and further in view of Hsieh. (5,574,443).

Regarding claims 65, 82 and 97, Secor discloses the two side cameras at the same height, but does not disclose the third camera at the same height. However, Hsieh discloses 3 cameras at substantially the same height. Furthermore, it would have been obvious to one of ordinary skill in



Art Unit: 2736

the art to locate the third camera at the rear on the rear spoiler at substantially the same height, because the spoiler is a convenient inconspicuous location.

10. Claims 74 and 91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Secor as applied to claims 69 and 85 above, and further in view of Hseih.

Regarding claims 74 and 91, Secor does not disclose the display system responding to the vehicle turn system. Hseih discloses activating the display system in response to the turn signal. (see column 4, lines 4-11). Furthermore, it would have been obvious to one of ordinary skill in the art to activate the display of Secor with the marker frame for highlighting objects too close in response to the turn signal so the display is activated when most needed and power is conserved.

11. Claims 78 and 95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Secor in view of Nishimura et al. as applied to claims 77 and 92 above, and further in view of Saneyoshi et al.

Regarding claims 78 and 95, Secor in view of Nishimura et al. does not disclose stereoscopic distance sensing. However, Saneyoshi et al. discloses stereoscopic distance sensing to provide a highly accurate display of the road and a distance between objects and the vehicle. Thus, it would have been obvious to one of ordinary skill in the art to use the distance sensing in Secor in view of Nishimura et al. in order to provide a display with a highly accurate disclosure of the distance between objects and the vehicle.

12. Claims 75 and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Secor as applied to claim 65 above, and further in view of Shaw et al. (5,529,138).

Art Unit: 2736

Regarding claims 75 and 76, Secor does not disclose sensing distance of objects from the vehicle. However, Shaw et al. discloses using laser radar to sense objects close to a vehicle and to activate an alarm to alert the driver of objects close to the vehicle. Thus, it would have been obvious to one of ordinary skill in the art to use the distance sensing of Shaw et al. in Secor to provide an additional notice for the driver of objects too close to the vehicle.

### ***Double Patenting***

13. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

14. Claims 50-114 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-54 of U.S. Patent No. 5,670,935. Although the conflicting claims are not identical, they are not patentably distinct from each other for the following: The claimed subject matter is the same except the independent claims of the application recite "at least one image capture device" and the independent claims of the patent recite "at least

Art Unit: 2736

two". The application claims are broader, but the patent claims still include all the limitations of the application claims.

***Allowable Subject Matter***

15. Claims 86, 70, 72, 100, 101 are rejected under double patenting, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and if the double patenting rejection is overcome.

16. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

(703) 308-9051, (for formal communications intended for entry)

**Or:**

Art Unit: 2736

(703) 305-3988, for informal or draft communications, please label  
"PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,  
Arlington, VA., Sixth Floor (Receptionist).

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ashok Mannava whose telephone number is (703) 308-6796. The examiner can normally be reached on Mon-Thur, 8:30-5:30 and every other Friday, 9:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeff Hofsass, can be reached on (703) 305-4717. The fax phone number for this group is (703) 305-3988.

Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is (703) 305-4700.

AKM

July 2, 1998



JEFFERY A. HOFSSASS  
SUPERVISORY PATENT EXAMINER  
GROUP 2700